

T08D05 – SL IB Practice MS

1. A
2. B
3. A
4. A
5. D
6. (a) (i) $0.0010 / 1.0 \times 10^{-3} \text{ (mol dm}^{-3}\text{)}$;
pH = 3; 2
- (ii) HCl: strong acid/fully dissociated;
CH₃COOH : weak acid/partially dissociated;
HCl less concentrated/CH₃COOH more concentrated;
only one molecule in 100 dissociates in ethanoic acid so $[\text{H}^+]$
1/100/OWTTE 3
- (b) measure electrical conductivity;
strong acids are good conductors/weak acids are poor conductors;
OR
react with magnesium or a named active metal/(metal) carbonate;
hydrogen carbonate/bicarbonate;
strong acids have a faster reaction/more gas bubbles (per unit time)
/more heat produced/weak acids have a slower reaction/less gas
bubbles (per unit time)/less heat produced; 2
- Accept answers based on:*
titration curves: namely strong acid and strong base will have an equivalence point pH of 7 and a weak acid and strong base will have an equivalence point pH of >7.
OR
temperature change: on neutralization for temperature change: namely,
neutralization ($\text{H}^+ + \text{OH}^-$) is exothermic, weak acid is partially dissociated so some energy used up in dissociation of weak acid \square net result, weak acid would produce less energy/less temperature increase compared to neutralization of strong acid.
- [7]
7. $\text{CH}_3\text{CH}_2\text{COOH} + \text{H}_2\text{O} \rightleftharpoons \text{CH}_3\text{CH}_2\text{COO}^- + \text{H}_3\text{O}^+ / \text{CH}_3\text{CH}_2\text{COOH} \rightleftharpoons \text{CH}_3\text{CH}_2\text{COO}^- + \text{H}^+$;
 \rightleftharpoons required for mark.
CH₃CH₂COOH and CH₃CH₂COO⁻/H₃O⁺ and H₂O; 2
- [2]
8. (i) HCl/X is strong and CH₃COOH/Z is weak;
HCl/X is fully dissociated and CH₃COOH is slightly dissociated;
 $[\text{H}^+]$ is greater in HCl/X than in CH₃COOH/Z; 2
- Any two for [1] each.*
- (ii) a factor of 100; 1
- [3]
9. vinegar and factor of 10^5 ; 1
- [1]